

microS™

A Micro-Optical Sublayer Profilometer and Shear Stress Sensor

The microS is the only optical shear stress sensor that directly measures the wall velocity gradient with no calibration required on the part of the user.

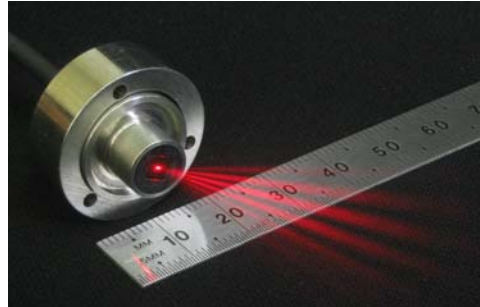
The microS is well suited for applications in liquid and gas fluidics. Its compact size (especially its length) allows it to be mounted where other sensors simply will not fit.

ADVANTAGES OF THE MICRO S:

- Highly accurate up to $Re_x=2 \times 10^6$
- Extremely compact and rugged
- No alignment needed
- No calibration needed
- Makes accurate measurement of fluids of varying temperature, pressure, and density
- Can measure wall shear stress magnitude and flow direction
- Battery operated option

APPLICATIONS INCLUDE:

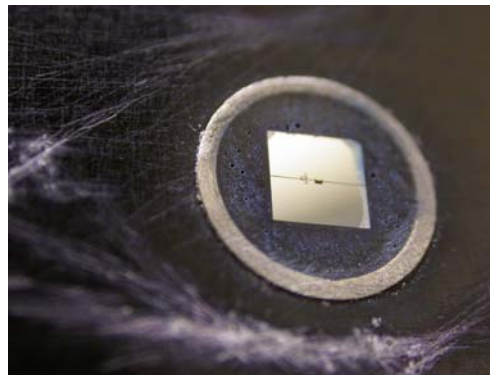
- Wall shear stress measurements
- Drag reduction
- Turbulence mixing
- Marine full-scale and model-scale vessel performance measurements
- Flow quality diagnostics
- Micro channels
- Wind, water, and oil tunnels and channels
- Boundary layer studies



The microS probe is shown here with the included mounting flange. Combined with a microV or a miniLDV, the set can measure the full profile of a boundary layer.



The microS system includes a microS probe, driver electronics, band-pass filter, and BP-microS acquisition hardware and processing software (computer is optional).



The microS probe is mounted flush with the surface of the model or flow channel to perform measurements within the boundary sublayer.

MEASUREMENT SPECIFICATIONS	
Shear stress range	0.7 to 6500 Pa (water) 0.015 to 140 Pa (air)
Repeatability	1%
Accuracy	99% typical

PROBE VOLUME	
Size (air) (x by y by z)	15 by 30 by 30 μm
Standoff distance (air)	75 or 135 μm

PROBE SPECIFICATIONS	
Probe weight	40g
Dimensions	0.375" (9.5 mm) diameter, 1.2" (30 mm) long

LASER SPECIFICATIONS	
Laser power	1 mW (in probe volume)
Wavelength	658nm
Laser type	Class IIIb

OPERATING PARAMETERS	
Temperature	0 to 65°C
Pressure	Up to 35 bar
PC requirements	32-bit PCI slot, Windows 2000, Intel Pentium 4 or better

OPTIONAL FEATURES	
Battery operated	
Steel-jacketed cable	

POWER SUPPLY	
110 Volt (standard)	
220 Volt (optional)	
12 Volt battery (optional)	

U.S. Patents Nos. 6,717,172 and 6,956,230



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